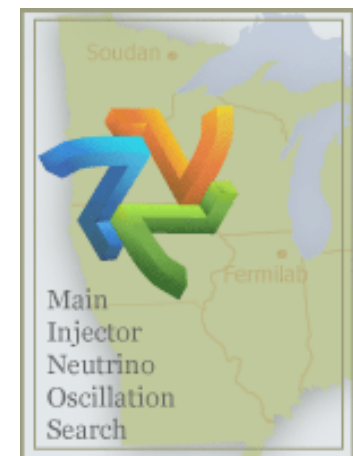


NOvA Online and Offline Software

Jonathan Paley
Argonne National Laboratory

July 15, 2010



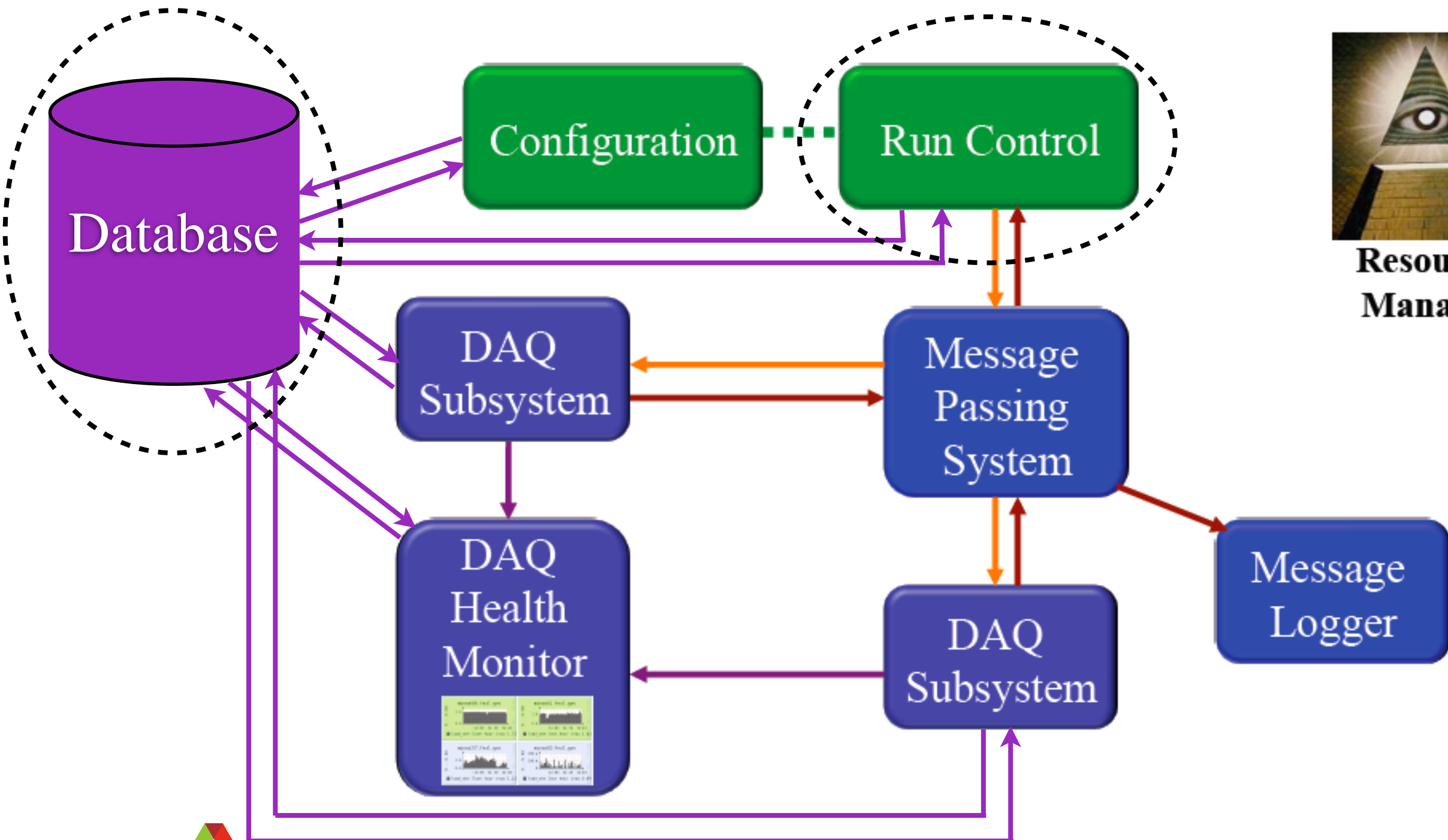
Outline

- ▣ NOvA DAQ Software:
 - Run Control
 - Database
- ▣ NOvA Offline Software:
 - Framework development (Database)
 - Event Display
 - Reconstruction Algorithms
- ▣ Hardware Database
- ▣ Run Coordinator
- ▣ MINOS Database

NOvA DAQ Software Control & Monitor Systems

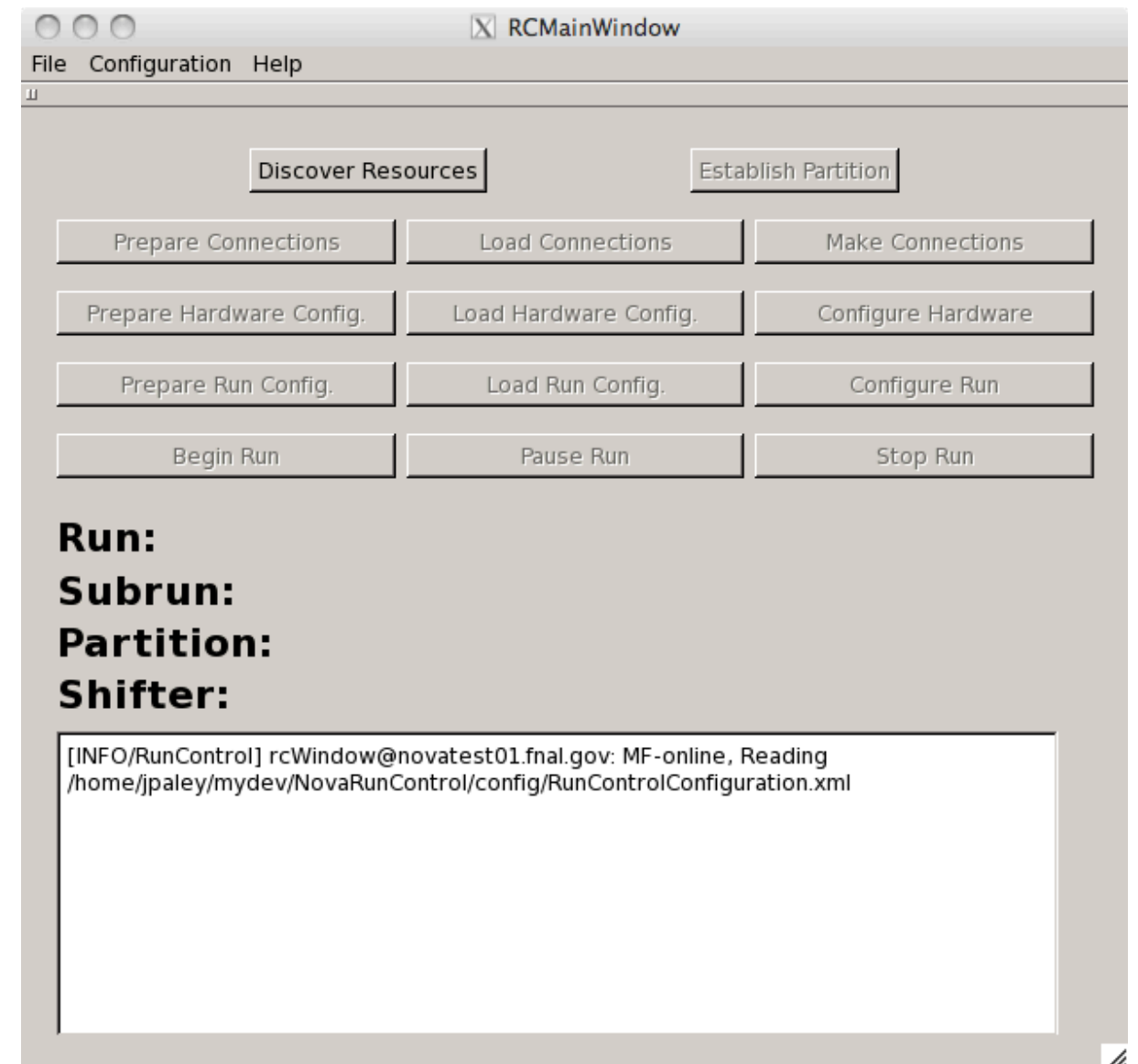


**Resource
Manager**



NOvA DAQ Run Control

- Interface between User and DAQ system
- Allows user to control and configure data collection
- All DAQ subsystems listen and respond to commands from Run Control:
 - Configure, Begin, Pause, Resume and End Run
 - Join/Unjoin “partition” (independent data collection process for some fraction of the detector)
- Recent “integration” test of Run Control interface with all subsystems was successful.

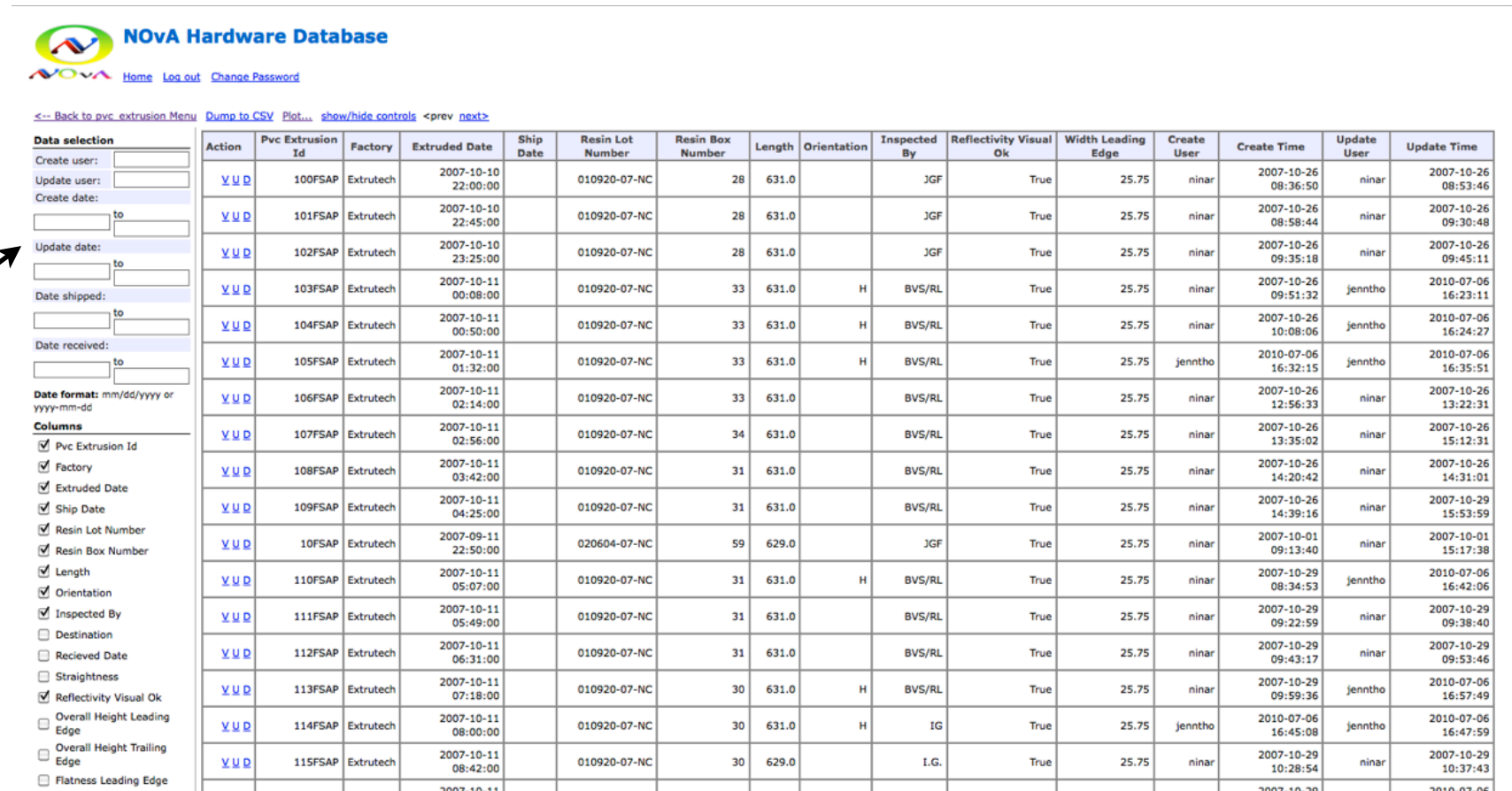


NOvA Databases

□ NOvA Database Coordinator:

- Project Hardware Database: used to track QA and QC data for all hardware components of the NOvA detectors.
- Online Database: used to store DAQ and DCS data relevant to detector operations
- Offline Database: used to store calibration, alignment and other analysis-specific constants

Hardware database
web interface
allows collaborators
to track progress,
make reports & plots.



NOvA Hardware Database

Home Log out Change Password

<-- Back to pvc extrusion Menu Dump to CSV Plot... show/hide controls <prev next>

Data selection

Create user:

Update user:

Create date: to

Update date: to

Date shipped: to

Date received: to

Date format: mm/dd/yyyy or yyyy-mm-dd

Columns

☒ Pvc Extrusion Id

☒ Factory

☒ Extruded Date

☒ Ship Date

☒ Resin Lot Number

☒ Resin Box Number

☒ Length

☒ Orientation

☒ Inspected By

☐ Destination

☐ Received Date

☐ Straightness

☒ Reflectivity Visual Ok

☐ Overall Height Leading Edge

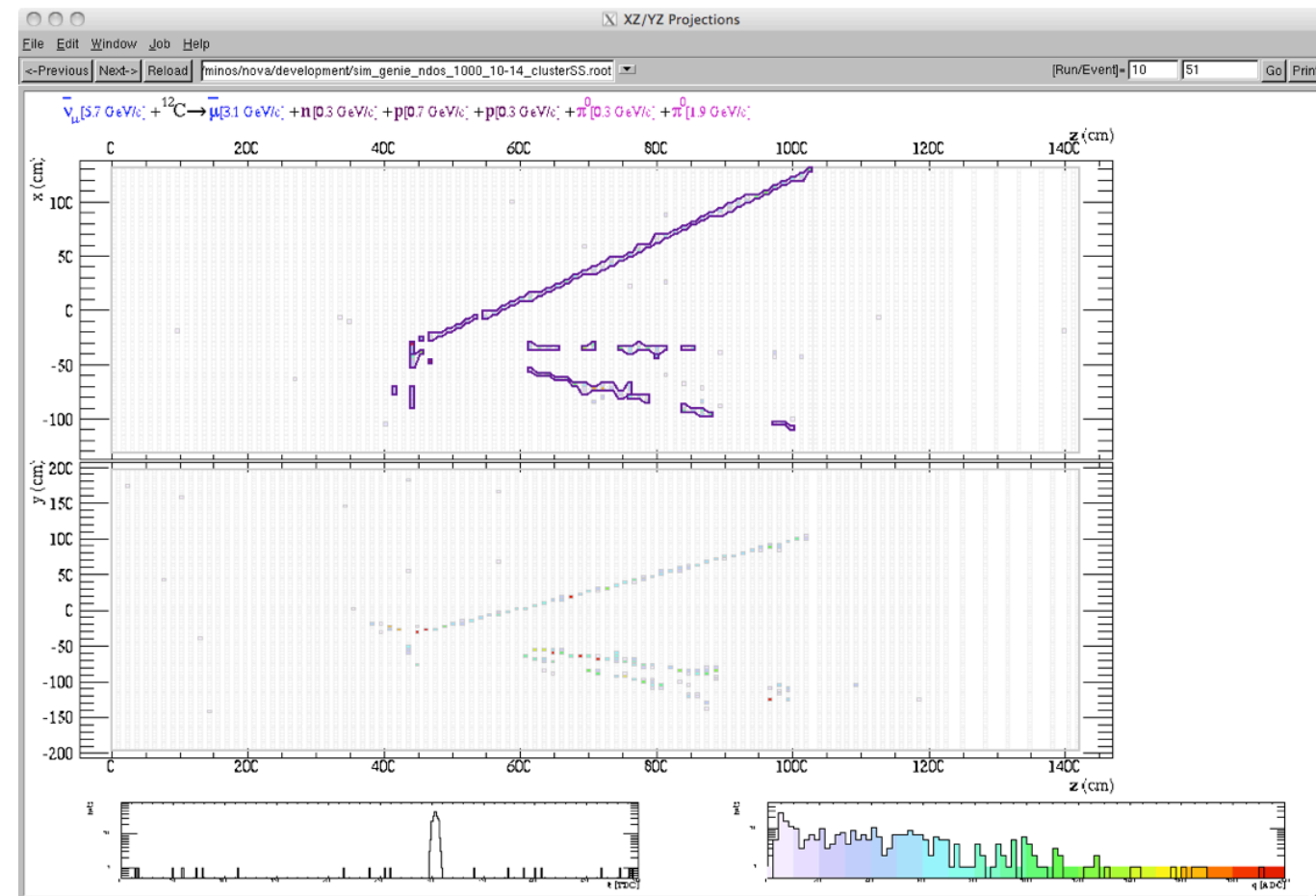
☐ Overall Height Trailing Edge

☐ Flatness Leading Edge

Action	Pvc Extrusion Id	Factory	Extruded Date	Ship Date	Resin Lot Number	Resin Box Number	Length	Orientation	Inspected By	Reflectivity Visual Ok	Width Leading Edge	Create User	Create Time	Update User	Update Time
Y U D	100FSAP	Extrutech	2007-10-10 22:00:00		010920-07-NC	28	631.0		JGF	True	25.75	ninar	2007-10-26 08:36:50	ninar	2007-10-26 08:53:46
Y U D	101FSAP	Extrutech	2007-10-10 22:45:00		010920-07-NC	28	631.0		JGF	True	25.75	ninar	2007-10-26 08:58:44	ninar	2007-10-26 09:30:48
Y U D	102FSAP	Extrutech	2007-10-10 23:25:00		010920-07-NC	28	631.0		JGF	True	25.75	ninar	2007-10-26 09:35:18	ninar	2007-10-26 09:45:11
Y U D	103FSAP	Extrutech	2007-10-11 00:08:00		010920-07-NC	33	631.0	H	BVS/RL	True	25.75	ninar	2007-10-26 09:51:32	jenntho	2010-07-06 16:23:11
Y U D	104FSAP	Extrutech	2007-10-11 00:50:00		010920-07-NC	33	631.0	H	BVS/RL	True	25.75	ninar	2007-10-26 10:08:06	jenntho	2010-07-06 16:24:27
Y U D	105FSAP	Extrutech	2007-10-11 01:32:00		010920-07-NC	33	631.0	H	BVS/RL	True	25.75	jenntho	2010-07-06 16:32:15	jenntho	2010-07-06 16:35:51
Y U D	106FSAP	Extrutech	2007-10-11 02:14:00		010920-07-NC	33	631.0		BVS/RL	True	25.75	ninar	2007-10-26 12:56:33	ninar	2007-10-26 13:22:31
Y U D	107FSAP	Extrutech	2007-10-11 02:56:00		010920-07-NC	34	631.0		BVS/RL	True	25.75	ninar	2007-10-26 13:35:02	ninar	2007-10-26 15:12:31
Y U D	108FSAP	Extrutech	2007-10-11 03:42:00		010920-07-NC	31	631.0		BVS/RL	True	25.75	ninar	2007-10-26 14:20:42	ninar	2007-10-26 14:31:01
Y U D	109FSAP	Extrutech	2007-10-11 04:25:00		010920-07-NC	31	631.0		BVS/RL	True	25.75	ninar	2007-10-26 14:39:16	ninar	2007-10-26 15:53:59
Y U D	10FSAP	Extrutech	2007-09-11 22:50:00		020604-07-NC	59	629.0		JGF	True	25.75	ninar	2007-10-01 09:13:40	ninar	2007-10-01 15:17:38
Y U D	110FSAP	Extrutech	2007-10-11 05:07:00		010920-07-NC	31	631.0	H	BVS/RL	True	25.75	ninar	2007-10-29 08:34:53	jenntho	2010-07-06 16:42:06
Y U D	111FSAP	Extrutech	2007-10-11 05:49:00		010920-07-NC	31	631.0		BVS/RL	True	25.75	ninar	2007-10-29 09:22:59	ninar	2007-10-29 09:38:40
Y U D	112FSAP	Extrutech	2007-10-11 06:31:00		010920-07-NC	31	631.0		BVS/RL	True	25.75	ninar	2007-10-29 09:43:17	ninar	2007-10-29 09:53:46
Y U D	113FSAP	Extrutech	2007-10-11 07:18:00		010920-07-NC	30	631.0	H	BVS/RL	True	25.75	ninar	2007-10-29 09:59:36	jenntho	2010-07-06 16:57:49
Y U D	114FSAP	Extrutech	2007-10-11 08:00:00		010920-07-NC	30	631.0	H	IG	True	25.75	jenntho	2010-07-06 16:45:08	jenntho	2010-07-06 16:47:59
Y U D	115FSAP	Extrutech	2007-10-11 08:42:00		010920-07-NC	30	629.0		I.G.	True	25.75	ninar	2007-10-29 10:28:54	ninar	2007-10-29 10:37:43

NOvA Offline Software

- Developed parts of the offline software framework, including:
 - Database interface
 - XML interface
- Author of code in
 - RecoBase package (base reconstruction objects, eg, hits → clusters → prongs → tracks/showers → vertices)
 - StdNtuple package (standard analysis ntuple package)
 - EventDisplay package (MCTruthViewer)



MC Particle List

File Edit Window Job Help

<-Previous Next-> Reload /minos/nova/development/sim_genie_ndos_1000_10-14_clusters [Run/Event]= 10 51 Go Print

☒ Negatives ☒ Neutrals ☒ Positives

Particle	Mother	Track Id	Momentum (GeV/c)	Vertex (cm)	# of hits	Time of 1st Hit	Energy Deposited
0: #pi^0	-1	5	1.8907	442.3018	0	9e+09	0.0000
1: #pi^0	-1	4	0.3183	442.3018	0	9e+09	0.0000
2: p	-1	3	0.2568	442.3018	1	1.928e+04	0.0345
3: p	-1	2	0.6784	442.3018	8	1.928e+04	0.1850
4: n	-1	1	0.3375	442.3018	0	9e+09	0.0000
5: #bar{#mu}	-1	0	3.0610	442.3018	534	1.928e+04	1.0540
6: e^{+}	0	3531	0.0416	1017.2065	0	9e+09	0.0000
7: #nu_{e}	0	3530	0.5911	1017.2065	0	9e+09	0.0000
8: #bar{#nu}_{e}	0	3529	0.9332	1017.2065	0	9e+09	0.0000
9: #gamma	4	2880	0.2400	442.3018	85	1.929e+04	0.0808

NDOS Run Coordinator

- NOvA NDOS Run Coordinator
- Oversee the day-to-day operations of the NDOS detector
- Manage shifts (3/24-hour period)
- Shifts begin Aug. 16, 2010 and continue for ~18 months
- Initially will help organize construction and commissioning of NDOS